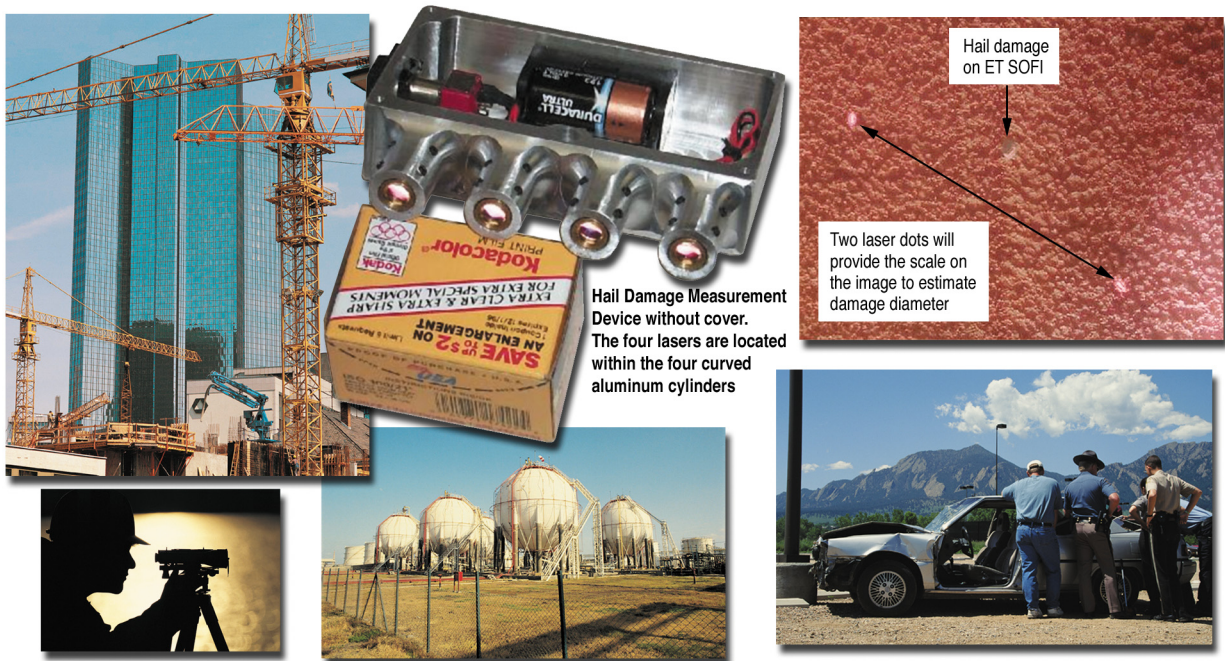




Technology Opportunity

Scaling Device for Photographic Images

The National Aeronautics and Space Administration (NASA) seeks to license the Scaling Device for Photographic Images technology. Developed at the John F. Kennedy Space Center (KSC), FL, this innovation is a tool that attaches directly to a charge-coupled device (CCD) or film camera and projects a known pattern into the field of view of the camera. When a photograph is taken, the image of this pattern appears along with the image of the object under investigation, allowing the viewer to quantify the size of the object. NASA's need for this development was inspired by hailstorm damage to the Space Shuttle's External Tank. Telephoto lenses are used to zoom in and see the damage clearly, yet the end viewer cannot determine the scale of the damage because there is no reference object in the image. In many photographic situations an object, such as a ruler, is placed within the field of view so that when the photo is seen, the viewer will have a visual indication of the scale of the other objects in it. For situations where this procedure is not possible, this innovation supplies a solution.



Hail Damage Measurement Device without cover. The four lasers are located within the four curved aluminum cylinders

Hail damage on ET SOFI

Two laser dots will provide the scale on the image to estimate damage diameter

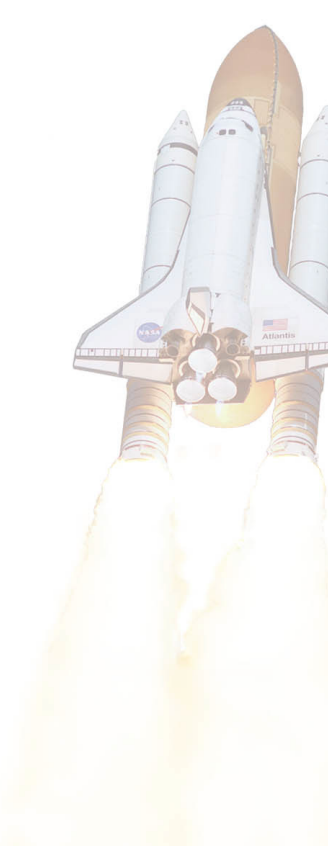
Potential Commercial Uses

- Oil and chemical tank monitoring
- Construction
- Accident scene investigation

Benefits

- As a simple and inexpensive scaling device, improves upon traditional tape measure and ruler approaches to scaling images.
- Provides an inexpensive means for preliminary inspection work to detect corrosion, damage, and reconstruction work for oil and chemical tanks.

Explore. Discover. Understand.

- 
- With modification to provide distance data, could be useful to law enforcement officers and investigators in accident scenes
 - Provides a specialty application in construction site distance, leveling, and surveying tasks

The Technology

In its present state, the scaling tool is a stand-alone device with no image processing software. It consists of four lasers (only two are needed for scaling, the other two are NASA-required backup) that are aligned in a row at a precise and known distance. When the lasers project onto the image at this spacing, they provide a scalable series of spaced reference points in the image. The packaging contains thermally stable mounting pots for the lasers with alignment adjustment screws. Class 3 lasers are used in the preferred design; however, cheaper and less powerful lasers can be used. The device has the potential to be easily modified to provide distance data. Current device attributes include:

- Usable scaling method from ~3 to 80 feet with no focusing elements
- Scaling accuracy within 1 %
- Four lasers, Class 3A, that are powered by a single 3-volt battery
- Compact device suited for camera mounting
- Scaling accurate at angles up to ± 20 degrees

Options for Commercialization

NASA seeks qualified companies to commercialize the Scaling Device for Photographic Images. This and other technologies are made available by the KSC Technology Commercialization Office through a variety of licensing and partnering agreements. These include patent and copyright licenses, cooperative agreements, and reimbursable and nonreimbursable Space Act Agreements.

Contact

If your company is interested in the technology Scaling Device for Photographic Images or if you desire additional information, please reference Case Number KSC-12201 and contact:

Jeff Kohler
Innovative Partnership Program
Mail Code: KT-F
Kennedy Space Center, FL 32899
Telephone: (321) 861-7158
FAX: (321) 867-2050
Jeffrey.Kohler-1@ksc.nasa.gov

Commercialization Checklist

- ✓ Patent Pending
 - U.S. Patent
 - Copyrighted
- ✓ Available to License
 - Available for no-cost transfer
 - Seeking industry partner for further codevelopment